

spirit of Wine, for the proportion of the same Water, to the same very well rectify'd spirit of Wine was, as 21. to 19.

So as to Refraction, Water is more Dense then Ice; for I have found by a most certain Experiment, which I exhibited before divers illustrious Persons of the *Royal Society*, that the Refraction of Water was greater then that of Ice, though some considerable Authors have affirm'd the contrary, and though the Ice be a very hard, and the Water a very fluid body.

That the former of the two preceding Propositions is true, may be manifested by several Experiments: As first, if you take any two liquors differing from one another in density, but yet such as will readily mix: as Salt Water, or Brine, & Fresh; almost any kind of Salt dissolv'd in Water, and filtrated, so that it be clear, spirit of Wine and Water; nay, spirit of Wine, and spirit of Wine, one more highly rectify'd then the other, and very many other liquors; if (I say) you take any two of these liquors, and mixing them in a Glass Viol, against one side of which you have fix'd or glued a small round piece of Paper, and shaking them well together (so that the parts of them may be somewhat disturb'd and move up and down) you endeavour to see that round piece of Paper through the body of the liquors; you shall plainly perceive the Figure to wave, and to be indented much after the same manner as the limb of the Sun through a *Telescope* seem to be, save onely that the mutations here, are much quicker. And if, instead of this bigger Circle, you take a very small spot, and fasten and view it as the former, you will find it to appear much like the twinkling of the Starrs, though much quicker: which two *Phenomena* (for I shall take notice of no more at present, though I could instance in multitudes of others) must necessarily be caus'd by an *inflection* of the Rays within the terminating superficies of the compounded *medium*, since the surfaces of the transparent body through which the Rays pass to the eye, are not at all altered or chang'd.

This *inflection* (if I may so call it) I imagine to be nothing else, but a *multiply refracted*, caused by the unequal *density* of the constituent parts of the *medium*, whereby the motion, action or progress of the Ray of light is hindred from proceeding in a streight line, and *inflected* or *deflected* by a *curve*. Now, that it is a *curve* line is manifest by this Experiment: I took a Box, such as A D G E, in the first *Figure* of the 37. *Scheme*, whose sides A B C D, and E F G H, were made of two smooth flat plates of Glass, then filling it half full with a very strong solution of Salt, I filled the other half with very fair fresh water, then exposing the opacous side, D H G C, to the Sun, I observ'd both the *refraction* and *inflection* of the Sun beams, I D & K H, and marking as exactly as I could, the points, P, N, O, M, by which the Ray, K H, passed through the compounded *medium*, I found them to be in a *curve* line; for the parts of the *medium* being continually more dense the neerer they were to the bottom, the Ray *p f* was continually more and more deflected downwards from the streight line.

This Inflection may be mechanically explained, either by Monsieur

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